

## Coding Samurai Internship – Task 1: Rule-Based Chatbot

### 1. Challenge Task Definition

The objective of this task was to design and implement a Rule-Based Chatbot using Python. The chatbot needed to act as a virtual assistant capable of understanding user input and responding appropriately using predefined rules. The challenge aimed to test logical thinking, pattern matching, and structured programming to build a chatbot without using machine learning models.

### 2. Model Usage

The chatbot was built using a rule-based approach. Instead of relying on trained AI models, it uses a set of predefined rules and keyword-based matching to identify user intent. Python libraries like 'random' and 're' (regular expressions) were used to handle response variations and accurate keyword detection. Each possible query is matched with a specific response type, making the chatbot responsive to various topics such as greetings, products, pricing, and store policies.

### 3. Why I Used This Model

The rule-based model was chosen because it offers simplicity, full control, and clear logic flow. It is ideal for limited-scope applications like customer support or store assistance, where the conversation domain is predictable. This approach also provides a foundation for understanding how chatbots process input and generate output before moving toward more advanced AI or NLP-based solutions.

### 4. Explanation and Results

The chatbot starts by greeting the user and asking for their name. It can respond to multiple user intents including questions about products, prices, store hours, location, and technical support. If the user indicates a desire to stop chatting, the bot recognizes exit commands and ends the session politely. The conversation responses are randomly selected from a list to make the interaction more natural.

### 5. Key Insights

- Rule-based systems are excellent for structured, domain-specific chatbots.
- Using regular expressions enhances input understanding and reduces false keyword matches.
- Randomized responses make interactions more dynamic and human-like.
- The task strengthened my Python programming, logic structuring, and text-handling skills.
- Future improvements can include NLP integration for more flexible, context-aware conversations.